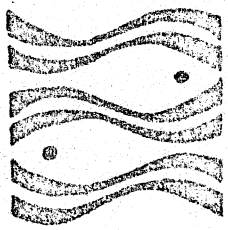

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The Sea Trout Year 1983

By

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Fishery Leaflet No. 123

THE SEA TROUT YEAR 1983

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Summary

Climatic conditions favourable to sea trout production did not improve in 1983 and juvenile output from freshwater was poor. Several years of a reduced smolt exodus have resulted in the stocks being depleted of older fish and a large proportion of the 1983 landings consisted of post-smolt (finnock). The mean smolt age has been tending upwards so that the prospect for "specimen" sea trout in the future is not good.

In spite of the depleted recruitment of the past few years the yield from sea trout fisheries has remained fairly constant: the estimated total catch between 1980 and 1982 varied from 49.4 to 59.3 tonnes. A steady catch total against a background of fluctuating recruitment is due to two factors: first, the catch being a small proportion of the stocks and second, the fact that sea run trout make a divided return to fresh water.

Indications of the sea trout catch in 1983 suggest an increase of 21% per rod licence return over the previous year and a general rise in the catch (taken by all methods) evaluated on a district basis. Other indicators emphasised the stable yield per effort. Expressed in terms of weight per rod day the 1983 return of 0.85 lbs was not very different from 0.82 lbs recorded the year before. The mean weight of sea trout captured in 1983 was slightly lower than in 1982, a consequence of there being fewer older fish in the stocks. Draft and drift net returns were within the range previously recorded; draft nets took on average 22 trout weighing 35lbs and drift nets each caught on average 2 sea trout amounting to 8lbs.

Numbers of "specimen" sea trout captured in 1983 equalled those taken in 1978 and 1983 is thought to mark the decline of fish deriving from the increased smolt exodus of the 1970s.

EXPLOITATION OF SEA TROUT IN 1983

Several indicators to the sea trout catch are examined and reviewed and compared with similar statistics in preceding years. The emphasis in this exercise is on obtaining consistency and agreement among the various statistics which should not be interpreted as absolute figures of yield.

Fishery District Figures

The estimates of total catch were requested on a fishery district basis at the end of the 1982 season from the Regional Fisheries Boards and such information as has been received is given in Table 1. As is generally the case statistics are not available from every fishery district. In keeping with previous years the figures should be interpreted as a single observer's estimate of the numbers of fish captured in the area with which he has greatest familiarity. Although the returns should be regarded as indications of catch rather than accurate totals they should be comparable with similar data collected in the two previous years. Overall the trend in Table 1 is an increase in catch over the previous year's of more than 50%.

Rod and line returns

Angling returns from the 1983 season received by the Department by early March 1984 amounted to 746. The results of their scrutiny are set out in Table 2 where they are expressed in lbs., this being the unit most commonly used and best appreciated by fishermen. Elsewhere in the Leaflet the metric system is used.

The weight of sea trout recorded per licence returned from the 1983 season was 6.27 lbs or an increase of 20.6% over the previous year. Both rod and

line returns and fishery district figures thus registered an increase in yield. In other respects however the nature of the catch in 1982 and 1983 would seem to be very similar, here also the weight of sea trout taken per rod day showed a slight improvement. The weight of individual fish taken declined slightly, suggesting either a large smolt exodus in 1983 or a decline in the number of older trout in the stocks.

Interpretation of angling returns

Deriving accurate catch figures from small numbers of anglers' returns is complicated by a number of factors. Several studies report that only the more successful anglers make returns and there are indications that the sub-total reported by these may constitute a very large proportion of the total catch. Hence extrapolation of total catch from small numbers of returns is likely to overestimate the yield of a particular fishery. The method of arriving at estimates of catch used in this series of leaflets is to obtain an average yield from the total number of licences scrutinised and multiply this by the total number sold. The advantage of this kind of figure is its comparability with similar estimates in the earlier years of the century. To demonstrate the kind of variation which can occur however the characteristics of information contained in four types of angling licence are shown in Table 3. For year on year comparison the data abstracted in Table 2 are more suitable. These suggest that the weight of sea trout taken per rod day and the ratio of trout:salmon fishing days do not vary greatly (see also Fishery leaflets Nos. 116 and 121); consequently the estimates of total catch are also fairly constant, in the short term at any rate.

Drift net catch

Drift and draft net returns have been examined on the same consistent basis for four years in succession (Table 4). The sample of drift net returns from 1983 was lower than in preceding years. The returns for 1983 would appear to indicate a real increase in the sea trout catch. However, six of the licence returns come from

the Eastern Fisheries Region where small meshed drift nets are used under bye-law for the capture of sea trout. These six returns accounted for 71% of the catch by number and 63% by weight; excluding them, 2.0 sea trout per drift net licence were recorded - within the range previously reported and the average sea trout drift net catch amounted to 8.1 lbs per licence.

Draft net catch

As for the drift net returns the sample of draft net licences was the smallest examined to date. It was also disproportionately biased in favour of the Eastern Fisheries Region where 63% of the total originated. Excluding these from consideration sea trout per draft net licence numbered 22.2 and 34.5 lbs, or within the range previously recorded. Draft net fisheries for sea trout are well developed along the east coast and inclusion of returns from this region in unrepresentative numbers is likely to distort the national estimate of catches arising from this type of engine. In both 1983 and the previous year however returns from the Northern Regional Fisheries Board were not available so the circumstances in which true estimates can be made are not ideal.

Specimen sea trout

Six specimen sea trout were registered in 1983, the lowest number since 1978. The higher counts of these fish recorded in the intervening years (Fig. 1) would appear to have begun to decline. This decline was anticipated on the basis of climatic criteria in Fishery Leaflet numbers 116 and 121 and the growing season indicator on which the assumption is based is also shown in Fig. 1 to demonstrate the correlation between numbers of trout and this statistic. Thus the angling season of 1983 possibly marks the end of the long lived survivors of the heavy smolt migrations of the 1970s.

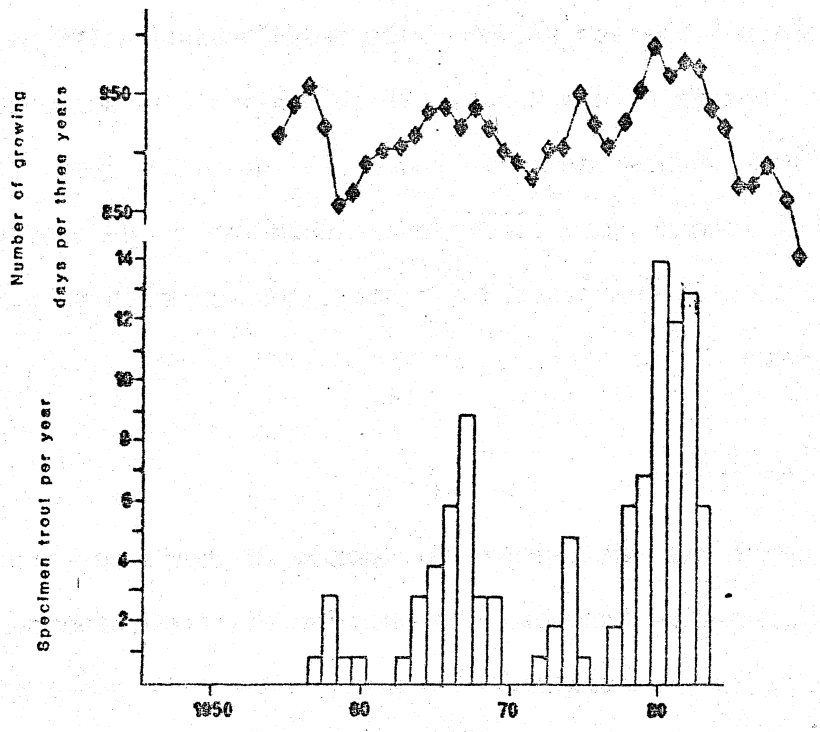

Fig. 1 Numbers of "specimen" sea trout recorded between 1970 and 1983 inclusive, presented with the accumulated three year growing day indicator, displaced six years to demonstrate correlation.

Specimen sea trout numbers can be used as an index of the presence of older sea trout in the stocks generally. However this interpretation of their numbers is valid only if sea trout are largely unaffected by inshore netting, a theory which is supported by earlier observations on the drift net catch (Fishery leaflet number 116) and if the angling catch does not fluctuate very much from one year to the next; analysis of returns from rod and line fishermen suggest that this is so.

Estimates of the National Catch

Four years' data from fishing seasons which were evaluated on a comparable basis are now available. The total licence sales figure for 1983 is not yet to hand and, as in previous years, a national estimate on that basis must await the finalisation of those figures. For the three previous years the catch estimate is as follows:

Year	Rod Catch	Draft Net Catch	Drift Net Catch	Totals
		kg		
1980	51102	8000	211	59313
1981	39691	8015	2190	49896
1982	37253	10186	1995	49434

Calculated by the methods described, there would appear to be considerable stability in the yield of sea trout fisheries over the short period under review. The fairly constant production of sea trout fisheries derives from a supposedly low rate of exploitation of the stocks and from the fact that the exploited fish consist of a mixture of year classes.

SEA TROUT STOCKS IN 1983

Climatic conditions

According to the criteria on which the environment for sea trout development is evaluated (the number of days annually on which the dry bulb temperature reaches or exceeds 5.6°C at the Shannon synoptic weather station) the unfavourable trend of recent years continued into 1983. The number of "growing days" - at 240 - was close to that recorded the previous year (233). The accumulated growing days for the three years 1981 - '83 inclusive, totalled 792, the lowest reading since 1948 when collection of data at Shannon commenced. A similar statistic for 1973-1975 inclusive was 983 growing days so that there has been a reduction of 191 days between 1975 and 1983. The mid-seventies were good years for sea trout production, a large juvenile exodus taking place then. The shorter growing seasons of more recent years have resulted in an erratic but generally lower output of juveniles from freshwater. Their divided return to freshwater as sea run fish occurs over a period and these figures are, in turn, depressed.

Migrations at Burrishoole, Co. Mayo

As in previous reports data from the above fishery were very kindly provided by Declan T. Quigley of the Salmon Research Trust of Ireland. A graphical summary of all such data from 1970 is presented in Fig. 2. The total exodus of juvenile trout in 1983 was similar to that in the previous year and a distinctive alternately good and poor sequence of juvenile output would appear to be stabilising.

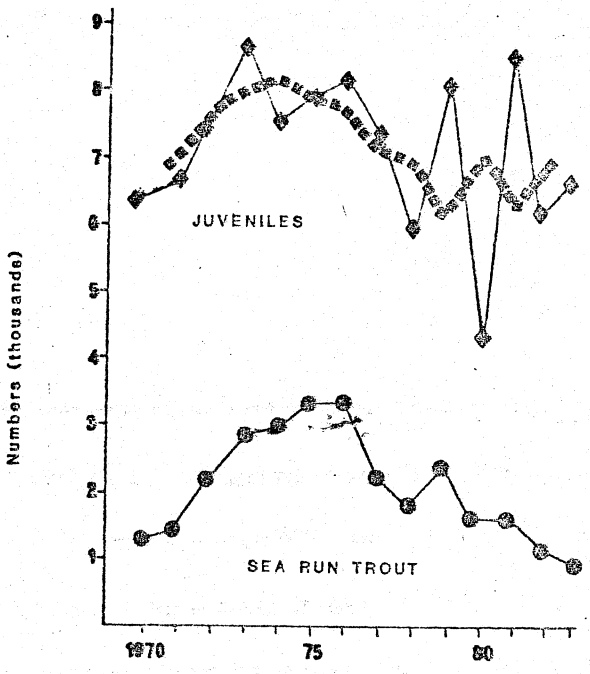

Fig. 2 Incoming and outgoing migrations of trout in the Burrishoole fishery from 1970 to 1983 inclusive. A three year moving average of juvenile numbers (dashed line) is included.

The Waterville stock at Currane

The annual census of rod caught sea trout in Waterville was undertaken by Paul O'Sullivan of Regional Technical College, Cork, in July and August. The dry weather of the summer months depressed angling conditions and the catch was small. Of 98 trout examined only 86 had run to sea. Their weight averaged 358g, lower

than that of the 1981 catch of 386g and half the value in 1980 when the fish had a mean weight of 725g. The low catch weights indicate the presence of many post-smolt or finnock in the stocks. Within the catch the proportion of finnock was the largest recorded in Waterville to date, 93%. The population structure suggested in Fig. 3 could represent either an increase in the production and recruitment or a decline in the numbers of trout of medium and large size in the stocks. Reference to Fig. 2 suggests that the position in the Burrishoole fishery was a low exodus of juvenile trout to sea and the smallest immigration of sea run fish since counts there commenced in 1970. A reduction in the percentage of trout of one sea winter and older is the most realistic interpretation of the population structure in Currane.

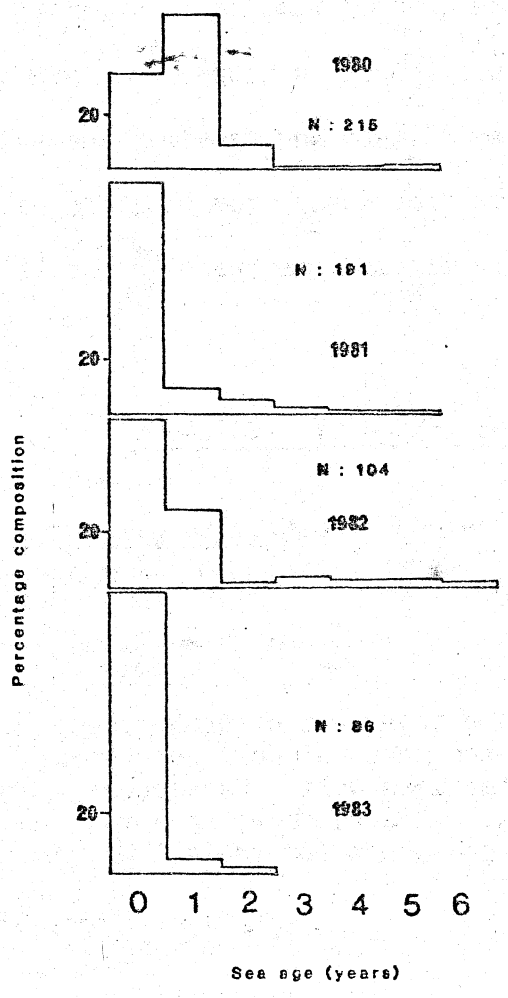

Fig. 3 Sea age composition of the Summer sea trout catch in Lough Currane, 1980 to 1983 inclusive.

Contributing to the large proportion of trout which recently moved to the sea in Waterville is their freshwater age; larger proportions of older than young post smolt make a first return in their year of first exodus. Recent mean smolt ages (MSA) of post smolt in Waterville were as follows:

Year	MSA	Remarks
1973	2.34	
1974	2.24	
1980	2.13	Downward tendency
1981	2.32	
1982	2.46	Upward tendency
1983	2.32	?

The MSA of post smolts was in 1983 similar to that in 1981; further data will be required to ascertain exactly what is happening. MSA expresses two influences on a migratory population, climate and density, whose interaction is not fully understood. It should be noted from the six years' data above that the trend in MSA approximately mirrors the trend in output of juveniles from Burrishoole.

REPORTS AND PUBLICATIONS RECENTLY AVAILABLE

Feeding ecology of feral rainbow trout Salmo gairdneri Richardson in Mulroy Bay, an Atlantic Sea lough.

Ir. Nat. J. 21 (3): 103-107

A comparison of the feeding behaviour of brown and rainbow trout in an Atlantic sea lough indicated that rainbows were more selective and, because food was not plentiful, fed less well. Consequently they accumulated fewer parasites than brown trout. The rainbows were most likely escapes from culture in the lough and prospects for their long term survival and reproduction in the wild are poor.

Fresh blood for Irish lake trout?

Trout and Salmon August 1983: 42-44.

Compared the numbers of specimen lake and sea trout registered annually. For the first fifteen years of the scheme lake trout were taken in greater numbers than sea trout although the cycles of abundance of the two were in synchrony. Since 1970 lake trout were captured in greater numbers than sea run fish although latterly sea trout have dominated the returns. The article speculates that artificial propagation may have influenced the quality of the fish beinq produced. The greatest artificial input of trout to lakes occurred between the mid 1960s and the mid 1970s.

The sea trout year, 1982

Fisheries Leaflet number 121: 11pp

Reviews the catch and sea trout stocks in 1982.

A commercial net fishery taking twaite shad Alosa fallax (Lacepede) in the estuary of the River Slaney Ir. Nat. J. 20 (11): 498-500.

This is a description of the catch of shad in an inshore fixed net fishery exploiting mainly mullet. Other reports describe the mullet catch and that of sea bass.

A niche for filling

Trout and Salmon February 1983: 69-70.

Examines the biology of sea run Salvelinus fontinalis, the North American brook trout, and makes comparison with Salmo trutta sea trout whose population structure and life strategy is very similar.

Food and gut parasite burden of migratory trout Salmo trutta L. in the sea.

Ir. Nat. J. 21 (1): 11-18.

Examines the feeding behaviour of sea trout in the Irish Sea. The stocks there are mainly piscivorous and the abundance of food permits them to achieve high condition.

Spawning trout Salmo trutta L. populations in the Cummeragh system, Co. Kerry.

Fisheries Bulletin (Dublin) No. 5: 10 pp.

A survey of characteristics of sea trout spawning in streams adjoining the Currane Fishery.

(with J.J. Nixon) Spawning trout in Eastern Connemara

Fisheries Bulletin (Dublin); No. 6: 11pp.

A survey of the characteristics of sea trout examined on the redds in Connemara. A comparison is made between these stocks and those of the Cummeragh in Co. Kerry.

Characteristics of the riverine phase of large sea trout.

Salmon and Trout Magazine 225: 66-69.

Comparison is made of "specimen" sea trout with a general collection of sea run fish from the Currane Fishery in Co. Kerry. Specimen sea trout derive predominantly from a young and early migrating sector of the population. Their growth characteristics are not remarkable but they are fish which are likely to undertake their first exodus when agricultural growing seasons are long.

AB

Table 1 Numbers of Sea trout caught in 1982 and 1983 as reported on a Fishery District basis.

Fishery District	1982	1983	% Change
Dublin	2,763	3,850	+ 39.3
Wexford		2,617	
Waterford	168	828	+392.9
Lismore	124	722	+482.3
Cork		436	
Kerry		4,557	
Limerick	1,003	622*	- 38.0
Galway	210	700	+233.3
Connemara	7,248	9,248	+ 27.6
Ballinakill		4,920	
Bangor	1,897		
Drogheda	1,668	4,369	+162.0
Totals for Districts reported in both years	13,184	20,339	+ 54.3

* Calculated from total weights at 0.85lb per fish

Table 2 Details of licensed rod fishing effort and sea trout catch in 1982 and 1983 from 817 licence returns from 1982 and 746 from the 1983 season.

	Ratio of sea trout fishing days to Salmon fishing days		Mean weight (lb) of individual sea trout caught		Average weight (lb) of sea trout caught per rod day	
	1982	1983	1982	1983	1982	1983
Dublin	0.39	0.67	1.22	1.43	0.43	0.11
Wexford	0.63	1.10	0.85	0.71	0.51	0.58
Waterford	0.09	0.06	0.95	0.91	0.53	0.49
Lismore	0.16	0.27	1.15	0.80	1.56	0.94
Cork	0.54	0.36	0.73	0.75	0.62	0.99
Kerry	0.83	0.95	1.24	1.49	1.06	1.44
(Currane)			(1.52)	(1.50)	(1.45)	(1.67)
Limerick	0.40	0.45	0.87	0.65	0.43	0.22
Galway	0.41	0.45	0.70	0.88	0.17	0.69
Connemara	2.65	3.68	1.12	0.92	1.86	2.58
Ballinakill	0.56	1.13	0.83	0.81	1.22	1.91
Bangor	0.78	1.01	1.17	1.09	1.13	1.05
Ballina	0.06	0.30	1.50	0.85	1.73	0.70
Sligo	0.53	0.14	1.26	0.81	0.39	0.85
Ballyshannon	0.22	1.42	1.29	0.95	1.00	0.21
Letterkenny	1.02	0.80	1.17	0.70	0.91	0.33
Dundalk	2.67	0.91	0.55	1.13	0.40	1.27
Drogheda	0.79	2.33	1.23	0.83	0.30	0.83
Averages from national totals	0.45	0.50	1.07	0.95	0.82	0.85

Table 3 Characteristics of the Salmonid catch reported from four categories of rod licence from the 1983 season.

Recorded	A	B	R	P
Sea trout				
Number	11.54	5.50	2.21	7.66
Weight(lb)	10.34	5.29	3.31	6.73
Days fishing	9.23	9.75	1.69	5.80
Salmon				
Number	3.85	3.22	0.93	0.87
Weight(lb)	25.37	24.25	6.11	6.11
Days fishing	19.98	22.72	2.88	2.89
Licences returned	171	305	117	116

Categories of licence

A, Annual, all districts, £10

B, Annual, one district, £5

R, Seven day, all districts, £3

P, Late season, one district, £3

Table 4 Returns from drift and draft licences for the years 1980-1983 inclusive.

DRIFT NETS

	1980	1981	1982	1983
Weight of Salmon per licence(lb)	989	1015	566	1340
Number of Salmon per licence	157	377	83	185
Mean weight individual Salmon	6.30	6.91	6.78	7.24
Weight of Sea trout per licence (lb)	0.5	5.5	5.3	26.0
Number of Sea trout per licence	0.1	2.0	1.6	8.4
Sea trout as % weight of Salmon	0.01	0.54	0.94	1.9
Mean weight individual Sea trout	3.89	2.72	3.36	3.08
Number of licences returned	72	230	138	57

DRAFT NETS

Weight of Salmon per licence(lb)	500	567	362	601
Number of Salmon per licence	68	76	54	92
Mean weight individual salmon	7.32	7.42	6.74	6.55
Weight of Sea trout per licence (lb)	29.4	23.9	40.1	107.6
Number of Sea trout per licence	22	13	26	74
Sea trout as % weight Salmon	5.9	4.2	11.1	17.9
Mean weight individual Sea trout	1.32	1.80	1.55	1.45
Number of licences returned	164	185	222	101